MEMO

Date: August 14, 1992

To: M. S. Buddy, RPD
B. D. Peterman, RPD

From: R. G. Smith, Jr., ERD RGS

Subject: Review Comments for "Draft Phase I RFI/RI Work Plan, 700 Area (Operable Unit 8), dated 6/22/92.

The following comments were prepared per your request dated July 13, 1992. Additional minor typographic and editorial comments are noted in the review draft. Due to space limitations, these notations will not be listed in this memo, but each page of Volume 1 should be checked when preparing the final report.

The report is generally well written and it is evident that a substantial amount of work went into the preparation of this work plan. My review focused mainly on the geologic and hydrogeologic aspects of the work plan, especially the proposed field activities, although I read much of Volume 1 and reviewed parts of Volumes 2 and 3. The proposed scope of work greatly exceeds the actions required by the IAG, but is consistent with the EPA RFI guidance document. Data collected under the Phase I investigation should provide a solid foundation for Phase II.

SECTION 1.0 INTRODUCTION

Page 1-27, 1st paragraph - Hydrostratigraphic Units: Additional hydrogeologic information, such as the range in depth to water and the presence of dry areas in the alluvium, would be useful in this section.

Page 1-28, 2nd paragraph: HSU 1 is identified on the previous page, however, it is uncertain what constitutes "other hydrostratigraphic units" - i.e. are deeper sandstone units collectively referred to as HSU 2 (as consistent with the definition in other OUs)? The general usage of the term "hydrostratigraphic units" to describe separate geologic units in the same HSU, such as made on page 1-29, paragraph 1 of Hydraulic Conductivities, is confusing and should discontinued. Refer instead to HSU 1 or its individual geologic components.

Page 1-29, 1st paragraph - Hydraulic Conductivities: Data on Arapahoe hydraulic conductivities do exist both locally and basin wide. Basin wide values are reported by the USGS in a series of reports on Denver basin aquifers. Local values exist for the lower Arapahoe from several EPA CERCLA investigations conducted at the Rocky Flats Industrial Park (Great Western Inorganics, Thoro Products) located 2 miles due south of the plant on Route 72.

Page 1-30, Water Level Maps: The discussion in this section is oversimplified with regard to the groundwater flow direction. Technically, Table 1.7 does not contain saturated thickness data, however the water level data presented does reflect an increasing or decreasing saturated thickness. Discussion of the groundwater flow direction should eliminate the reference to gradient since groundwater gradients are directionless.

Table 1.5: A spot check of data in this table indicated some discrepancies with Appendix C, particularly location and elevation. The type of alluvium at each well is useful information, however I think it would be

more useful to identify the geologic interval monitored by the well. Likewise, the well total depth would be more appropriate for wells than the boring depth since the table summarizes other types of well data.

Table 1.7: Data from some wells (i.e. P218089, P209289 and P214689) are missing from the table. There may be other well data missing as well.

Figures 1-14 and 1-16: These figures are poorly reproduced and are difficult to interprete.

Figure 1-20: Well 2186 is missing.

Figure 1-25: It is inappropriate to correlate potentiometric data from deep wells with shallow wells, such as indicated for well 2586.

SECTION 2.0 OPERABLE UNIT 8 SITE CHARACTERIZATION

Page 2-76, 1st and 2nd paragraphs - Section 2.4.1.20 IHSS 163.2: These paragraphs are virtually identical to the 3rd and 4th paragraphs on page 2-59. Are they accurate or possibly misplaced?

Section 2.5 Conceptual Models of Releases and Receptor Pathways: There should be continuity with figure numbers in this section and other sections.

Table 2.12: Nitrate as N or NO3?

Tables 2.17 to 2.31: Check units in these tables for errors, i.e. g/g, g/l, g/kg etc.

SECTION 3.0 ROCKY FLATS PLANT CHEMICAL SPECIFIC BENCHMARKS

No comments.

SECTION 4.0 RCRA FACILITY INVESTIGATION/REMEDIAL INVESTIGATION TASKS

Page 4-3, 2nd paragraph: Change "vadose water sampling" to saturated zone sampling. Vadose zone water sampling is not an activity in Section 6.0.

Page 4-4, 1st paragraph - Section 4.5.1 Site Characterization: According to the proposed drilling program, depth to bedrock and bedrock type may not be determined at every IHSS. Soil borings are planned to the top of the saturated zone which may exist above bedrock.

Page 4-4, 2nd paragraph - Section 4.5.1 Site Characterization: I presume that hydrogeologic data from sources other than data generated from this study will be used for describing hydraulic gradients and water table configuration.

SECTION 5.0 DATA NEEDS AND DATA QUALITY OBJECTIVES

Page 5-4, 1st paragraph: Again, the terminology for "uppermost and lower most groundwater flow systems" is confusing compared to previous definitions. Does this mean interconnection between alluvium and bedrock (both of which comprise HSU 1), or HSU 1 with HSU 2? There needs to be consistency with this conceptual model! It is true that interconnection between saturated alluvium and the No. 1 Arapahoe sandstone needs to be better defined, however, the field program as currently proposed will not accomplish it.

Page 5-18, 2nd paragraph: Describe here or in Section 6.0, what exactly a BAT sampler is and generally how it operates. There are limitations with this sampling technique that should also be addressed (see discussion for Section 6.0, sub-stage 4b). Explain the rationale behind the selection of TCL volatile compounds, chromium and nitrate for groundwater sample analysis. Will samples be analyzed for total or dissolved Cr? These

contaminants are potentially associated with a few IHSSs, but it is not clear, for example, why rad or acid spill sites are sampled for Cr and VOCs; solvent sites are sampled for Cr and NO3; or cooling tower blowdown sites are sampled for VOCs and NO3. With the exception of NO3 analysis, the reference to groundwater sampling and measurement of field parameters will not apply to BAT groundwater samples.

Table 5.6: Reference is made to sampling wells in this table, but only BAT sampling is mentioned in Section 6.0.

SECTION 6.0 FIELD SAMPLING PLAN

Page 6-11, 1st paragraph - Sub-stage 2a--Portable GC Soil Gas Surveys: Soil gas surveys are proposed for many of the OU8 IHSSs despite that fact that only a few have had associated VOC releases. The justification for these surveys at non-VOC contaminated sites is apparently related to the limited occurrence of VOCs and semi-VOCs in downgradient areas as indicated by the RFEDS data base. In my opinion, the performance of soil gas surveys at non-VOC sites seems unnecessary having reviewed Section 2.4.1 of this work plan and the RFEDS groundwater quality data presented in various tables and Appendix F. Soil gas surveys are certainly appropriate for IHSSs 118.1, 118.2, 123.1, 144 (possibly), and 151. Organic contaminant releases may also have occurred from IHSSs 163.1, 172 and 173 according to Table 1.2. Justification for soil gas surveys at the other IHSSs based on the RFEDS groundwater quality data is extremely tenuous because of the uncertainty involving the distance and downgradient position of the monitoring wells from the IHSS, sporatic occurrence of trace levels of the individual VOC contaminants (typically in the early data), and data qualifiers associated with much of the results. Field PID/FID measurement of soil headspace samples (see SOP for Soil Gas Sampling) would be an alternate method for the screening of samples for lab analysis.

Page 6-11, 2nd paragraph - Sub-stage 2a: Given the rocky nature of the soils, a backup method of installing sample probes would be advisable in the event penetration cannot be achieved with the specified method.

Page 6-18, 1st paragraph: Certain samples should be transfered as soon as possible to the laboratory, specifically VOCs. Usually, laboratories are contractually allowed a certain number of days from the time they receive a sample until it must be analyzed. They cannot, for example, be expected to receive and analyze a sample on the last day of the holding time. This comment applies to later references of this statement also. Are EG&G personnel responsible for rad screening of samples for shipment, or should this be the contractor's responsibility? Who will perform rad screens of personnel and equipment? Experience has shown that the subcontractor should provide their own (or subcontracted) trained personnel to avoid delays. We should not rely on other subs or RPTs without guaranteed support for the duration of field activities.

Page 6-19, 2nd paragraph - Shallow Soil Samples: It is unlikely that much geologic and hydrologic data will be gained from shallow borings, i.e. bedrock and water table depths, due to the shallow depth of investigation.

Page 6-20, 1st paragraph - Soil Borings and Leach Testing: Same comment as for page 6-19 above. More data will be obtained from the soil borings, but bedrock information will not be collected if the boring stops in saturated alluvium. I recommend that atleast one boring at each IHSS be drilled six feet into bedrock to provide additional geologic data for the geologic characterization and Phase II planning.

Page 6-21, last paragraph: Collection of vadose zone soil samples for SPLT leach test analysis has merit and logically follows the results of shallow soil sampling. I assume that leach test sample preparation and volume requirements will also be evaluated during the collection of shallow soil samples.

Page 6-22, BAT Sampling: BAT sampling is a potentially useful method for screening groundwater quality at appropriate IHSSs. The main drawback is the small volume of groundwater produced for analysis. At some sites, notably rad and acid spill sites, analysis of parameters other than VOCs and Cr would be more appropriate. Has the subcontractor considered other temporary groundwater sampling techniques that might yield larger quantities of groundwater for analysis (i.e. pH, specific conductance, gross alpha/beta)? Considering the anticipated lithology, how much fill time per sample aliquot is expected and is it reasonable? I

have no problem with the rest of the sampling procedure provided that the soil boring is advanced to just below the BAT sampling depth following sample collection in order to characterize the geology of the sampled zone (even better if taken to bedrock). Samples should also be collected from borings located immediately upgradient from sites where the BAT sampling technique is used for documenting contaminant releases. Initial BAT sampling will not directly address the DNAPL issue, but these compounds should be detected if present.

Page 6-24, 1st paragraph - Vadose Investigation: Is the BAT sampler suitable for collecting vadose water samples?

Page 6-24, 2nd paragraph - Vadose Investigation: Given the lithology, can a sufficient amount of vadose zone water be collected for lab analysis? Discuss in TM-2 when written.

Page 6-27, last paragraph: Referring to the last sentance, why not sample the piezometer instead of using the BAT?

Page 6-36, Section 6.5.6 Analytical Requirements: For groundwater, the only analyses mentioned in previous sections were VOCs, Cr and NO3 for BAT samples. This is inconsistent with the analyte list given here, and measurement of pH, conductivity and temperature in the following paragraph.

Table 6.1:

IHSS 118.1 - The collection of discrete samples at 4 foot intervals for VOC analysis makes more sense than the 2 foot composite samples specified in the IAG, however has this change been approved by the agencies? I don't understand the rationale behind sampling for metals at a solvent spill site. Please explain.

IHSS 123.1 - Were any investigation activities planned for 123.2?

IHSS 144(N),(S) - Reference is made to locating a soil boring at a soil gas survey location, but there is no mention of performing VOC soil analyses. The IAG specifies total americium instead of Am-241, and U-233/234, U-235 and U-238 instead of total uranium at this IHSS.

IHSS 150 (inclusive) - Analysis of soil samples for VOCs is questionable. Uranium isotopes are specified for analysis in the IAG instead of total uranium.

IHSS 151 - Under soil borings, the IAG specifies that borings will be drilled to the deeper of the two condition specified, not the shallower.

IHSS 163.2 - Uranium isotopes are specified for analysis in the IAG rather than total uranium.

IHSS 173 - Soil borings are not required as part of the IAG. Their installation may not be necessary pending the results of the shallow soil sampling.

Table 6.3: This table does not reflect the special requirements of the BAT samples.

Figures 6-16 and 6-17: The SOP specifies that VOC samples will be collected from the base of every other 2-foot drive sample (i.e. 6-inch sleeve), not the entire 2-foot interval mentioned in the figures.

SECTION 7.0 TASK SCHEDULE

No comments.

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SECTION 8.0 HUMAN HEALTH RISK ASSESSMENT PLAN

Figure 8-1: Parts of IHSSs 150.4, 150.6 and 150.7 are shown under buildings. Is this accurate?

SECTION 9.0 ENVIRONMENTAL EVALUATION WORK PLAN

No comments.

SECTION 10.0 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES AND ADDENDUM

Pagination of this section should conform with other sections of the work plan.

Figure 10-1: Update personnel shown in this figure.

Table 10.1: Several bullets need to be added to this table. SOP GW.03 applies to well drilling, completion and development; SOP GT.08 applies to soil gas sampling; and SOP GT.22 may apply to BAT sampling.

Section 10.1.3, Design Control and Control of Scientific Investigations: Investigation-derived waste is not addressed here or elsewhere in the report.

Page 11 of 30, 1st paragraph - Objectives for Field QC Samples: Holding times for VOCs and possibly other analytes may be missed if equipment rinsate blanks are held for analysis pending the analytical results from field samples. This approach seems impractical and may compromise the documentation required to demonstrate that decontamination techniques were effectively employed.

Page 13 of 30, 1st sentance - Section 10.1.3.8 Quality Assurance Monitoring: Who will conduct the daily field inspections?

SECTION 11.0 REFERENCES: The entire reference list should be checked for duplication. I found two instances of identical references by glancing at just one page (11-2), i.e. three references to the DOE IAG and two references to the Doty and Associates O-3 pump testing report.

COMMENTS ON THE OU 8 RI/RFI WORKPLAN
prepared by Ken Korkia, Rocky Flats Cleanup Commission
July 21, 1992

General Comments

1) Adequate diagrams need to be developed in order to show the coverage of OU 8 in the remedial investigation. These diagrams would show the areas that will be undergoing surface soil scraping, soil boring, and monitoring well installation. With these diagrams one would be able to visualize better the extent of coverage of the field investigation in the area.

2) For easier reading and comprehension, it would be preferable to combine the material in sections 2.3 and 2.4 so that the physical descriptions of the IHSS's are combined with the descriptions of their contamination.

3) If the extensive volume of analytical data from RFEDS was not thoroughly reviewed due to time constraints for submittal of this workplan, what does this say about the workplan itself? Will the initial stages of the RI/RFI be adequate to evaluate this data?

4) How will incorrect information in the IAG be corrected? For example, IHSS 123.1 with its new boundaries to include the storm water runoff to pond B-1 will need to be incorporated. (Also 126 and 125)

Specific Comments

Page 2-38,39. Where is the analytical data for IHSS 118.2? The text says to look at subsection 2.4.1 and in table 2-X, but such data is not found.

Page 2-5. The discussion of the valve vault leak should be rearranged to tell what happened first, then followed by what was done. First the leak occurred on April 4, 1983, then the transfer of liquid wastes was discontinued and the dikes built. These last two paragraphs almost give the impression that two separate events occurred.

The entire **section 2.4.4** needs to be rewritten for better clarity and to correct errors. For example:

> **Page 2-41.** Is the figure 4,050 correct for the amount of leakage? The figures in parenthesis would suggest that 1,350 would be the correct number. (Appendix B, in its description of IHSS 123.2 lists that 2700 gallons of laboratory and 2700 gallons of laundry waste were released. The text on page 2.41 has omitted the laundry waste from the sentence that is in parenthesis.)

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Page 2-41,42. This last paragraph is confusing when it refers to both lab and laundry waste. Which type was involved in the December 1958 incident, or were they both involved. How come this is the first reference to the fact that both process wastewater and laundry wastewater were both involved? (This confusion will be clarified once the comment above is incorporated.)

Page 2-41. The last paragraph mentions that there was leakage into a ditch but does not give any more details. Where did the water flow that leaked into that ditch? (This information is found on page 2-7, which points to the necessity of combining all of this information into one section.)

Page 2-42. Where did the plutonium come from that is mentioned as having been detected in a 1976 Radiometric Survey? This definitely appears strange since the soil sample was taken from a depth of 4 feet.

Page 2-42. The last paragraph states that extreme contamination would be in the 500,000 to 1,000,000 pCi/g range. What type of activity is this? Alpha, beta, plutonium, uranium?

Page 2-8. Monitoring wells are mentioned as being located in the vicinity of IHSS 123.3, but no information is found in the description of the nature and extent of contamination on pages 2-41,42. Is this part of the information that was not reviewed because of the time constraints?

Page 2-43. The first paragraph implies that the reader understands all about the chemical processes at Rocky Flats. What materials are contained in the treated liquid decanted from the second stage batch precipitation process in Building 774?

Page 2-44. Where did the liquid that was released in the spill of Tank #66 go?

Page 2-48. The description of the blowdown retention pond is very weak. It is almost like it is still dubious whether it really existed and was utilized. The description needs to be more straight forward in presenting the facts about this pond.

Page 2-50. Second paragraph, the Section number for the discussion of the two steam condensate tanks needs to be filled in.

Page 2-51,52. The capacity of the HF cylinders is listed as 1,200 and 1,300 pounds. Which is correct?

Page 2-53. When the contractor makes statements such as "additionally it is improbable that there was impact on surface or groundwater," does that preclude their further investigation?

Page 2-56. What is the significance when the statement is made that extremely contaminated areas must reach a threshold of 500,000 to 1,000,000 pCi/g to be called "extremely contaminated?" Does this mean that investigations will only take place in areas with that reading, or that cleanup will only proceed in areas with that high of a reading?

Page 2-54. Is it possible that any process wastewater could have overflowed tanks 776 C and D, into the laundry wastewater tanks 776 A and B and then contributed to the problems described in this section? Is it normal for the laundry wastewater to have such elevated readings as described in this section?

Page 6-2. The first sentence in the last paragraph needs to be fixed, substitute "to" for "the" before the word precipitation.

Page 6-4. The last sentence in the first full paragraph is incomplete. The section number that is being referenced needs to be filled in.

Page 6-22. Under the subsection "Sub-Stage 2C," the third line needs to have the Figure # included.

Appendix B, IHSS 126.2 description. "Many pipelines from the OPWL have been abandoned and may still be present. These pipelines represent both obstacles for intrusive investigations as well as pathways for migration." What precautions are being taken in the field investigation to avoid these obstacles? How closely will the investigation of the OPWL be coordinated with this OU 8 investigation?

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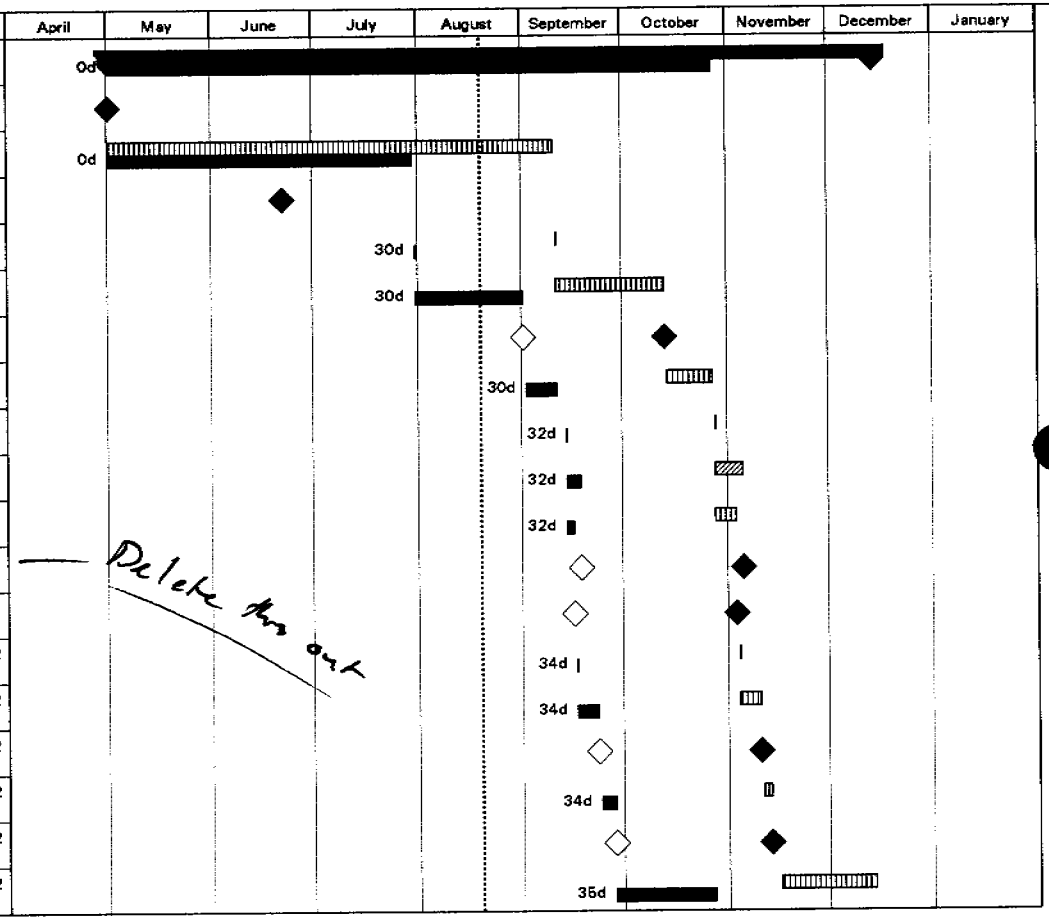
Schedule for Completion of the Final Phase I RFI/RI Work Plan - Operable Unit No. 8 - 700 Area

Name	Sched. Start	Sched. Finish	Planned Start	Planned Finish
FINAL WORK PLAN PREPARATION	5/1/92	12/14/92	5/1/92	10/27/92
IAG Submit Draft Work Plan	5/1/92	5/1/92	5/1/92	5/1/92
EPA/CDH Review Draft Work Plan	5/1/92	9/10/92	5/1/92	7/30/92
Resubmit Work Plan Per NOV	6/22/92	6/22/92	6/22/92	6/22/92
Meeting - Agency Comment Review	9/11/92	9/11/92	7/31/92	7/31/92
Incorporate EPA/CDH/DOE/EG&G Comments	9/11/92	10/13/92	7/31/92	9/1/92
Submit Draft-Final Work Plan	10/13/92	10/13/92	9/1/92	9/1/92
EG&G/DOE Internal Review Draft Final	10/14/92	10/27/92	9/2/92	9/11/92
Comment Response Meeting EG&G/DOE	10/28/92	10/28/92	9/14/92	9/14/92
Incorporate EG&G/DOE Comments	10/28/92	11/5/92	9/14/92	9/18/92
Prepare Comment Response Summary	10/28/92	11/3/92	9/14/92	9/16/92
Resubmit Draft-Final w/comments	11/5/92	11/5/92	9/18/92	9/18/92
Submit Comment Response Summary	11/3/92	11/3/92	9/16/92	9/16/92
Comment Response Meeting EG&G/DOE	11/4/92	11/4/92	9/17/92	9/17/92
Incorporate EG&G/DOE Comments	11/4/92	11/10/92	9/17/92	9/23/92
Submit Final Work Plan to EG&G/DOE	11/10/92	11/10/92	9/23/92	9/23/92
Transmittal Processing	11/11/92	11/13/92	9/24/92	9/28/92
IAG Deliverable to CDH/EPA	11/13/92	11/13/92	9/28/92	9/28/92
Review and Approve Final RFI/RI Work Plan	11/16/92	12/14/92	9/28/92	10/27/92



Project:
Date: 8/19/92

Planned
Critical
Noncritical
Planned Milestone
Milestone
Summary

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